

## *How to Save Energy in an Office Environment*

With demand for energy at record highs in California, every little thing you can do to reduce your electric usage helps. Below is a fact sheet summarizing key energy saving tips for office equipment. A key recommendation involves adjusting your computer monitor settings to go to standby mode after fifteen minutes of monitor inactivity. Did you know that the majority of personal computers, including even new energy-efficient models, are not configured with optimum energy-saving monitor settings? Simply setting your monitors to switch to standby mode after 15 minutes of inactivity can potentially save a minimum of \$20,000 (200,000 kWh) annually for every 1000 computers. Instructions for modifying monitor settings are provided at: <http://www.microtech.doe.gov/EnergyStar/info.htm>.

Limited testing in a PG&E local office found that typical 17-inch monitors each consumed approximately 70watts, while 19-inch monitors used around 90watts. We found that when these monitors are in sleep or standby mode, they consume only 2-3 watts. The attached fact sheet includes energy-saving recommendations and other valuable tips related to office equipment.

### The Facts About Office Technology and Energy Use

#### **True or False:**

**1. It's more efficient to leave computers on all day than to turn them on and off.**

**False.** Cycling power on and off to your computer will not harm late-model machines. Energy star<sup>®</sup> computers, monitors and printers can automatically power down to save electricity when not being used. About 30-40 percent of personal computers (PCs) and printers are left running at night and on weekends, and these machines are idle as much as 90 percent during a typical work day. Although several types of computers and network-related equipment may not be turned off, just turning off the monitor can still save from 30-60 percent of a computer's overall energy use. To learn more, see [www.energystar.gov/index.cfm?c=computers.pr\\_computers](http://www.energystar.gov/index.cfm?c=computers.pr_computers).

**2. Despite the introduction of energy-efficient computers in recent years, only 40-60 percent of equipment is delivered by the manufacturer properly configured for energy savings.**

**True.** Nationwide, between 0.5-1 percent of the nation's power is wasted just on improperly configured PCs and office equipment. That wasted power adds up to more than \$2 billion each year. Simply helping users properly configure the energy management features of their PCs, and reminding users to shut down their PCs at night, can reap big rewards in energy - and monetary - savings. The easiest step is to configure monitors to shut down after a desired downtime in minutes. To find out more, select "Configure Monitor" at <http://eetd.lbl.gov/BEA/SF/GuideR.pdf>.

**3. Large organizations that enable power management on their computer monitors could save approximately 200,000 kWh per year for every 1000 monitors.**

**True.** Information about energy savings can be found at:  
[www.energystar.gov/index.cfm?c=monitors.pr\\_monitors](http://www.energystar.gov/index.cfm?c=monitors.pr_monitors)

**4. It's hard to get employees to remember to turn off computer equipment when they leave at the end of their day.**

**False.** The "Guide to Reducing Energy Use in Office Equipment," published by Lawrence Berkeley National Laboratory, tells you how easy it is. Through nighttime audits, the lab found a large percentage of computers, monitors and printers operating after business hours. The lab found one simple and easy method of producing significant energy savings: send employees a reminder, asking them to turn off their equipment at night. For more information, see:  
<http://eetd.lbl.gov/BEA/SF/GuideR.pdf>

**5. Additional energy is needed to remove the heat produced from office equipment.**

**True.** The heat generated by operating monitors and PCs can be significant enough to add to the cooling load of an office building. By decreasing the amount energy your office uses, you will also significantly reduce cooling costs as well.

**6. Extraneous electrical devices can also run up an electric bill.**

**True.** Of the "miscellaneous" plug loads, the devices that may significantly increase electricity use are those with long operating hours: refrigerators, coffee pots, heaters and fans. Intermittent-use devices, such as toaster ovens, may be of concern for building wiring, but not for energy use. Coffee pots, because they are often left on all day, can use considerable energy.

## Energy Consumption of Typical Office Equipment

Table 1 - Current Electricity Use and Potential Savings (*kWh/year per workstation*)

Savings from Conservation Measures

<b>Equipment Type</b>	<b>Current Use</b>	<b>Turned Off at Night</b>	<b>Configured Properly</b>	<b>Both</b>	<b>Potential Use</b>
Computers	177	80	31	91	86
Monitors	250	114	71	134	116
Printers	93	51	6	52	41
Copiers**	63	15	6	15	48
Fax Machines	8	N/A	0	0	8
Terminals	27	15	N/A	15	12
Task Lights	88	22	N/A	22	66
<b>Total</b>	<b>706</b>	<b>298</b>	<b>117</b>	<b>339</b>	<b>367</b>

\*\* (Keep in mind that not every workstation contains a copier, so its use is spread out)

## Tips

- **Multipurpose Machines.** One promising new trend that helps improve the energy efficiency of office equipment is to combine peripheral office equipment functions - printing, scanning, faxing and copying - into one machine called a “hydra.” Because so much energy is consumed by peripherals in “standby” mode, fewer office machines mean less energy consumed. The power consumption of one manufacturer’s hydra (an eight-page-per-minute laser printer/fax/scanner/copier) is rated at 40 watts in standby mode with a maximum of 300 watts when active, substantially less than the cumulative ratings of the most efficient individual components.
- **Correctly Configure Your Copier.** Although computers collectively use the most energy in an office environment, the copy machine is by far the largest single user of electricity. By correctly configuring your copy machine, you can save quite a bit. New copiers feature automatic duplexing (copying on both sides of the paper at the same time) and a sleep mode that shuts them down when they are not in use. Utilizing the sleep mode is the best way to minimize energy usage.
- **Keep Paper Use in Consideration.** Making a single sheet of paper requires about 15 watt-hours of energy. One simple but highly effective step your office staff can take is to change copier settings to duplex (automatic double-sided copying). This saves a substantial amount of paper - and money. ■
- **Make Sure Your Office Equipment is Energy Star-Certified.** A study by researchers at Pacific Northwest Laboratory demonstrated simple paybacks of 1-2 years for the incremental costs of replacing obsolete or failed computers with properly configured Energy Star equipment. For lists of Energy Star-certified office equipment, go to: [www.energystar.gov](http://www.energystar.gov). Click on “Business Improvement,” and scroll down the page until you see “Find Energy Star Office Equipment.”
- **Purchase Office Module Occupancy Sensors:** To take a step beyond the energy star computer, consider cubicle occupancy sensors that will turn off all cubicle lights, fans, monitors, and any other miscellaneous equipment when unoccupied.

## Additional Links

- [http://www.pge.com/003\\_save\\_energy/003b\\_bus/003b5\\_energy\\_tips.shtml](http://www.pge.com/003_save_energy/003b_bus/003b5_energy_tips.shtml). This PG&E Web site gives tips on easy ways to reduce office use.
- [http://www.pge.com/003\\_save\\_energy/003b\\_bus/003b7\\_spot.shtml#office](http://www.pge.com/003_save_energy/003b_bus/003b7_spot.shtml#office). This PG&E Web site gives estimates on usage values for different types of office equipment.
- <http://eetd.lbl.gov/bea/sf/Tools/PLUGLOAD.XLS>. This Lawrence Berkeley Lab spreadsheet estimates your office usage and potential savings using various techniques

## References

- <http://eetd.lbl.gov/EA/Reports/39466>
- <http://standby.lbl.gov/>
- <http://eetd.lbl.gov/bea/sf/>
- <http://www.lbl.gov/Science-Articles/Archive/Energy-Star.html>
- <http://www.eren.doe.gov/energytips/equipment.html>
- [http://www.eren.doe.gov/cities\\_counties/pdfs/saving.pdf](http://www.eren.doe.gov/cities_counties/pdfs/saving.pdf)